

## CLAIMS

1. High performance tyre comprising a carcass provided with at least one carcass ply (3), a belt in which there are two or more layers (7) of reinforcing cords parallel to each other in a layer and crossed with respect to those of the adjacent layer, applied circumferentially on the carcass, a radially external layer (8) of circumferentially oriented reinforcing cords applied on the belt, a tread band (10) which comprises an underlayer (11) and an external layer (12), characterized in that the underlayer (11) has a hardness which remains substantially unvaried in a temperature range of between 23°C and 100°C.

2. Tyre according to Claim 1, wherein the hardness of the underlayer (11) does not vary by more than 5 IRHD in a temperature range between 23°C and 100°C.

3. Tyre according to Claim 2, wherein the hardness of the underlayer (11) does not vary by more than 1 IRHD in a temperature range between 23°C and 100°C.

4. Tyre according to Claim 1, wherein the hardness of the underlayer (11) is greater than 80 IRHD at 100°C.

5. Tyre according to Claim 4, wherein the hardness of the underlayer (11) is greater than 85 IRHD at 100°C.

6. High performance tyre comprising a carcass provided with at least one carcass ply (3), a belt in which there are two or more layers (7) of reinforcing cords parallel to each other in a layer and crossed with respect to those of the adjacent layer, applied circumferentially on the carcass, a radially external layer (8) of circumferentially oriented reinforcing cords applied on the belt, a tread band (10) which comprises an underlayer (11) and an external layer (12), characterized in that the underlayer (11) has an elastic modulus ( $E'$ ) which is substantially unvaried in a temperature range between 70°C and 100°C.

7. Tyre according to Claim 6, wherein the elastic modulus ( $E'$ ) of the underlayer (11) does not vary by more than 10% in a temperature range between 70°C and 100°C.

10038622.010802

8. Tyre according to Claim 7, wherein the elastic modulus of the underlayer (11) does not vary by more than 5% in a temperature range between 70°C and 100°C.

9. Tyre according to Claim 6, wherein the elastic modulus (E') of the underlayer (11) is greater than 15 Mpa at 100°C.

10. Tyre according to Claim 9, wherein the elastic modulus (E') of the underlayer (11) is greater than 20 Mpa at 100°C.

11. High performance tyre comprising a carcass provided with at least one carcass ply (3), a belt in which there are two or more layers (7) of reinforcing cords parallel to each other in a layer and crossed with respect to those of the adjacent layer, applied circumferentially on the carcass, a radially external layer (8) of circumferentially oriented reinforcing cords applied on the belt, a tread band (10) which comprises an underlayer (11) and an external layer (12), characterized in that the underlayer (11) is made from an elastomer compound comprising reinforcing fibres and hardening resins.

12. Tyre according to Claim 11, wherein the underlayer (11) has a ratio between the 10% elongation load in the circumferential direction and the 10% elongation load in the transverse direction which is greater than 3.

13. Tyre according to Claim 11, wherein the hardening resins are based on components chosen from among one or more of the following groups: resorcinol-methylene donors, epoxides-dicarboxylic acids, epoxides-diamines, epoxides-polyols, alcohol-diacyds.

14. Tyre according to Claim 13, wherein the methylene donors are hexamethoxymethylenemelamine (HMMM) or hexamethylenetetramine (HMT).

15. Tyre according to Claim 11, wherein the underlayer (11) comprises a hardening resin based on resorcinol and methylene donors in precondensed form in a quantity greater than 0.5 phr.

16. Tyre according to Claim 11, wherein the compound of the underlayer (11) comprises a hardening resin based on resorcinol and methylene donors in the form of two components, with a quantity of resorcinol greater than 0.5 phr and a

10038622.010802

quantity of methylene donors corresponding to a ratio with resorcinol between 0.5 and 3 phr.

17. Tyre according to Claim 11, wherein the reinforcing fibres are chosen from among: polyamides, polyesters, polyolefins, carbon fibres, glass fibres and polyvinyl alcohol.

18. Tyre according to Claim 17, wherein the reinforcing fibres are aramide fibres.

19. Tyre according to Claim 18, wherein the compound of the underlayer (11) contains a quantity of aramide fibres ranging between 3 and 10 phr.

20. Tyre according to Claim 19, wherein the compound of the underlayer (11) contains a quantity of aramide fibres ranging between 6 and 9 phr.

21. Tyre according to Claim 11, wherein the underlayer (11) has a thickness greater than 1 mm.

22. Tyre according to Claim 21, wherein the underlayer (11) has a thickness ranging between 1.5 and 2 mm.

23. Tyre according to Claim 11, wherein the thickness of the underlayer (11) is variable.

24. High performance tyre comprising a carcass provided with at least one carcass ply (3), a belt in which there are two or more layers (7) of reinforcing cords parallel to each other in a layer and crossed with respect to those of the adjacent layer, applied circumferentially on the carcass, a radially external layer (8) of circumferentially oriented reinforcing cords applied on the belt, a tread band (10) which comprises an underlayer (11) and an external layer (12), characterized in that the underlayer (11) has a hardness and an elastic modulus (E') which remain substantially unvaried between 70°C and 100°C.

25. Method for improving the behaviour at high speeds of a high performance tyre in which there are a carcass provided with at least one carcass ply (3), a belt comprising two or more layers (7) of reinforcing cords parallel to each other in a layer and crossed with respect to those of the adjacent layer, applied circumferentially on the carcass, a radially external layer (8) of

10038622.010802

circumferentially oriented reinforcing cords applied on the belt, and comprising the step of mounting on the periphery of the radially external layer (8) a tread band provided with an external layer (12) and an underlayer (11), characterized by the fact of using a thermostable compound for said underlayer (11).

26. Method according to Claim 25, wherein the thermostability of the compound is achieved by using reinforcing fibres and hardening resins.

27. Method according to Claim 25, wherein said thermostable compound has an elastic modulus (E') which remains substantially unvaried in a temperature range between 70°C and 100°C.

28. Method according to Claim 25, wherein said thermostable compound has a hardness which remains substantially unvaried in a temperature range between 23°C and 100°C.

29. Method according to Claim 25, wherein said tread band (10) is obtained by means of coextrusion of the external layer (12) and the underlayer (11).

30. Method according to Claim 25, wherein the underlayer (11) is obtained by means of calendaring.

2003010 220000